QUARTERLY (First) REPORT ON

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SUBJECT OF INVESTIGATION

CORRELATION BETWEEN SUSCEPTIBILITY TO ORAL INFECTION AND INTESTINAL BACTERIAL FLORA IN THE INBRED MOUSE STRAINS RAISED BY SELECTIVE BROTHER-SISTER MATINGS IN OUR LABORATORY.

RESPONSIBLE INVESTIGATOR

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SCOPE OF SERVICES

1) Mass breed two inbred mouse strains.

We have managed to raise three inbreed mouse strains by selective brother-sister matings started from one pair of "ddN" strain mice. These strains, which we named dd/Kf, dd/Ks, and dd/Kr, have been selected for their susceptibility to infection with Salmonella enteritidis, and they are different from each other not only in susceptibility to the infection, but also in immunizability against it.

Two of these strains, dd/Ks and dd/Kr, was selected for this research. The dd/Ks strain mice have a higher susceptibility to the salmonella infection than dd/Kr strain mice.

We started to produce monthly 150 disease-free mice of the two strains. For this purpose 60 femals and 60 male mice was provided as parents based on the assumption that the size of a litter will be 5.

2) Study the relation between normal intestinal flora to the infection.

We have been studying oral infection in experimental animals and found that multiplication of infected microorganisms in the intestinal tract had a close relation to the normal

intestinal bacterial flora of the host. The results as follow: adult mice had more stable intestinal flora than baby and orally administered bacteria were eliminated from the intestines within a short period and their own normal flora did not change at all. After the derangement or elimination of normal intestinal flora by X-irradiation, starvation, administration of cortisone , CCl_4 , or some antibiotics newly administerd bacteria resided in the intestines for a long time.

Based on these lines of basic study we intend to study systematically the intestinal flora of these inbred mouse strains to clarify more precisely the significans of each member of intestinal flora to oral infection with Salmonella or Shigella.

a. Significance of Enterococci as normal intestinal flora to the infection. As the representative of gram positive cocci in normal intestinal flora, we selected Enterococcus and gave them orally after pretreatment with antibiotics to clarify the significans of this bacteria to the following oral infection with Salmonella or Shigella.

b. Significance of gram negative bacilli as normal intestinal flora to the infection. For the same purpose as mentioned above, one strain of Escherichia coli was selected as the representative of gram negative bacilli in normal intestinal

flora.

We are expecting that the correlation between orally infected Salmonella or Shigella, and Enterococci or gram negative bacilli which are both the members of normal intestinal flora, will be clarified by these experiments.

3) Examine genetical characteristics of each inbred mouse strain by reciprocal matings and cellular and humoral factors making up the host's defense to infection of the mice.

The purpose of this experiment is to test the homogenity of genetic constitution of these strains.

As one of the tests to prove the homogenity cell-transfer will be carried out.